



Pathomorphologic Features of Histogenetic Types of Uterine Myoma

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Received 2nd Oct 2023,
Accepted 19th Oct 2023,
Online 8th Nov 2023

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Abstract: in the world uterine myoma is the most common disease in women of reproductive age and ranks second in prevalence after pelvic inflammatory diseases. In most cases uterine myoma runs without clinical signs, therefore the urgent task of early detection and treatment of this disease, improvement of preventive measures is defined. Among gynecologic diseases "... uterine myoma occurs in 25-35% of women of reproductive age. At the age of 30-34 years, its frequency increases to 55.0%. After the age of 35 years, the risk of uterine myoma in women reaches maximum levels of 76-80%.

Key words: uterus, pathomorphology, myoma.

Introduction. Nowadays there is a combination of uterine myoma and pregnancy, which increases the risk of complications during pregnancy and labor. Uterine myoma complicates pregnancy and labor in 65-70% of cases. The importance of myoma is significant medically and socially, as myoma directly affects the quality of life and reproductive capacity of women. Therefore, further improvement of information on the degree of occurrence, duration and specific pathomorphologic changes of each form of the disease is considered one of the most important problematic issues of modern medicine and is of great scientific and practical importance.

A number of focused scientific studies are conducted worldwide to assess the pathomorphologic characteristics of the incidence of uterine myoma depending on the age of the woman and the number of pregnancies. In this regard, studies aimed at assessing the degree of uterine myoma occurrence by age groups in women, the specificity of uterine myoma development depending on the number of births, comparative morphological characterization of leiomyoma histotopography by age groups, the degree of expression of immunohistochemical markers in different forms of leiomyoma and comparative analysis of morphometric indices of tissue structures are needed.

In our country complex measures are being implemented to improve the quality of medical sphere development, adaptation of the health care system to the requirements of world standards, including effective diagnosis, treatment and prevention of various somatic diseases. In this regard, in raising the level of medical services to a new level in accordance with the seven priorities of the new development strategy of Uzbekistan for 2022-2026.... improving the quality of qualified service of the population in primary health care....". It is advisable to conduct research based on these objectives,

including better assessment of the pathomorphologic characteristics of the incidence of uterine myoma depending on the age of women and the number of pregnancies.

Over the past 40 years, the incidence of uterine myoma in women under 30 years of age has increased from 2% to 12.5%. In recent years, the pathomorphologic aspects of myoma, the influence of myoma on the course of pregnancy and their complications have been studied by many researchers in the pre- and postmenopausal period [I.V. Sakhaudina et al., 2014]. But the influence of pregnancy and the number of births on the occurrence of myoma is poorly studied. In the literature we analyzed, we did not encounter pathomorphological studies reflecting the relationship between age-related forms of myoma, the influence of pregnancy on the development of myoma, complications of various forms of myoma.

In our country, a number of authors have conducted scientific studies on early diagnosis of various somatic diseases, effective diagnosis and treatment of disorders of modern treatment technologies (R.I. Israilov, 2022, D.A. Nishonov, 2022), but the pathomorphological characteristics of the incidence of uterine myoma have not been evaluated depending on the age of women and the number of pregnancies.

Analysis of literary data, including in our country, shows that early detection of myoma development and complications remains an urgent problem and is insufficiently studied. To date, there is insufficient data on the dynamic changes, course and morphogenesis of this pathology, so there is a high risk of complications, accordingly, further improvement of the tactics of early diagnosis and prevention of complications indicates the relevance and necessity of the problem.

Aim of the study: To study pathomorphologic features of histogenetic types of uterine myoma

Materials and Methods of the Study: 50 tissue-surgical nodules obtained at the Department of Pathologic Anatomy of the Clinic of the Andijan State Medical Institute, as well as 25 biopsy specimens of normal myometrium as a control for them were studied in 2019-2022. Archival materials of myometrium obtained at autopsy for forensic histologic examination of the bodies of 25 women aged 20 to 50 years (average 40.8 ± 1.3 years) from severe convulsions and sudden deaths without pathology of the reproductive system were used as a control group. A total of 75 samples of tachryx and biopsy material were examined clinically and morphologically.

The mean age of the patients was 35 ± 10 years. The incidence in women was more common between the ages of 30-39 and 40-49 years. Normal uterine myoma was observed in 25 patients and was categorized into group 1, proliferative leiomyoma, epithelial cell leiomyoma, atypical leiomyoma were observed in a total of 25 patients who were grouped into group 2.

In this study, 50 patients underwent 50 Jarrox hysterectomy and myomectomy surgeries during 2019-2022, and 25 women who received uterine tissue for other reasons were diagnosed using retrospective analysis of case histories. The retrospective analysis examined anamnestic data (hereditary and family history), complaints, reproductive function, somatic pathologies, gynecologic diseases, and completed diagnoses. The mean age of the patients was 35 ± 10 years. Patients were categorized according to age groups. Normal uterine myoma was observed in 25 patients and was categorized into group 1, proliferative leiomyoma, epithelial cell leiomyoma, atypical leiomyoma were observed in a total of 25 patients who were grouped into group 2.

When clinical and anamnestic data were studied, patients with simple myoma had a longer period from onset to surgery than patients with proliferative myoma. This is due to the fact that proliferative myoma grows faster, early manifesting clinical and morphological symptoms: menometrorrhagia, infertility and uterine cavity deformity, negatively affecting fetal development, causing abortions.

Most patients were referred with several complaints at the same time. In proliferative uterine myomas, the frequency and intensity of patients' complaints were higher compared to normal myomas. The

main frequency of complaints in patients of the second group was as follows: general weakness in 13 women (52%), increased weakness, multiple and prolonged menstruation in 15 people (60%) and 16 people (64%), respectively, and pelvic pain and dysuric signs unrelated to the menstrual cycle in 13 people (52%) and 16 people (64%), respectively. At the same time, the frequency of complaints such as multiple menstruation and dysuric symptoms showed a statistically significantly higher result in group 2 patients compared to the corresponding figures in group 1.

Uterine myoma was often accompanied by uterine bleeding, which in most cases led to the development of posthemorrhagic anemia in the patients. It is worth noting that in patients with normal uterine myoma hemoglobin levels in most cases corresponded to the indicators of a mild degree of anemia, in 18 patients (72%), in 16 patients with proliferating myoma (64%) hemoglobin content was less than 90 g/L. The proportion of 100-110 g/L in patients of the first group was the highest - 72% (18 patients), with 70-79 g/L being the lowest - 4% (1 patient), while in patients of the second group this index was higher and was 80-89 g/L in 36% (9 patients) and less than 70 g/L in 8% (2 patients).

To elucidate the role of a number of factors in the development of morphological types of uterine myoma, the features of anamnestic reproductive and menstrual functions in the patients were analyzed. The presence of somatic and gynecologic diseases in the patients was also studied.

When studying the incidence of extragenital pathologies in patients with uterine myoma, a higher incidence of endocrine and metabolic disorders, diseases of the digestive organs, circulatory system, diseases of the urinary system and chronic inflammatory diseases of the upper respiratory tract was observed.

Endocrine and metabolic disorders were observed in almost every fourth patient, regardless of the forms of tumor development; their frequency of occurrence was 26 and 25% in the first and second groups, respectively.

Thyroid pathology was detected 2.5 times ($P < 0.05$) more often in patients with proliferative myoma than in normal myoma: 13.5 and 37.5%, respectively.

No significant differences in the frequency of concomitant diseases of the digestive and cardiovascular systems depending on the type of myoma were found. It was found that the most common diseases in the majority of patients were diseases of the digestive system. It was found that functional disorders of the nervous system (psychoemotional diseases, neuroses, depression) were significantly more common in the examined women of the 2nd group - 36% (9 patients), and in the 1st group this indicator amounted to 12% (3 patients). Regardless of the development of various forms of uterine myoma, it was noted that most of the patients had a history of appendectomy procedure. There was no significant difference in the frequency of cardiovascular, respiratory, and urinary system diseases (chronic pyelonephritis) in the groups of female patients.

Analysis of menarche formation by age showed that the majority of patients in all groups began menstruation at the age of 12-14 years, which is the norm for women living in the Fergana Valley; no significant differences between the groups were found in this indicator. The nature of menstrual dysfunction differed in the groups of female patients depending on the histologic type of uterine myoma. Patients with proliferative myoma (group 2) had a statistically more frequent metrorrhagic type of menstrual dysfunction compared to patients with normal uterine myoma (group 1). Patients have been reported to have a relatively high incidence of Heise cycle disorders, mainly in the form of hyperpolymenorrhea and metrorrhagia.

When the peculiarities of reproductive function in different forms of uterine myoma are studied, a significant proportion of pregnancies in patients end in spontaneous abortion or induced termination of pregnancy. Evaluation of reproductive history showed that pregnancy resulted in 16 deliveries (64%) in group 1 patients, while in group 2 it was reported much less frequently - in 9 (36%) women. It was

noted that women with proliferative uterine myoma were more likely to have primary infertility than patients with normal myoma (28% and 8%, respectively). It is also worth noting the high frequency of induced abortions characteristic of patients in both groups.

Complications after induced and spontaneous abortions also differed significantly and amounted to 32% in group 1 and 70% in group 2. These were inflammatory diseases of the genital organs, bleeding (dysfunctional bleeding), which were often observed in patients with proliferating uterine myoma.

The study of reproductive history showed that at the early stage, the reproductive function of most women did not change significantly compared to the norm. At the same time, it was found that previous surgical interventions (surgical interventions performed on uterine and cervical scraping) and their complications can lead to the development of many complications during pregnancy and childbirth, and subsequently to the development of endometrial and myometrial pathologies.

In the anamnesis of the patients, attention was drawn to the high frequency of gynecologic diseases. It was observed that severe gynecological history was characteristic of the patients of both groups. It was observed that there were no statistically significant intergroup differences in cervical pathology and ovarian and derivative tumors. However, in the group of female patients with proliferative uterine myoma, the frequency of hyperplastic processes in the endometrium was noted to be significantly higher than in the group of female patients with normal uterine myoma, the values of the indicators in these groups were 64.6% and 10.6%, respectively.

Leiomyoma. According to the analysis of the results obtained during histological examination of 25 removed myomatous nodular tumors of the uterus, all of them were characterized as simple uterine myoma without stromal edema. The smooth muscle cells were dominated by primary nodules with intermuscular and subserosal localizations with chaotically arranged bundles. The tissue structure showed predominance of connective tissue components and a small number of vessels.

It was observed that normal leiomyoma consisted of barriers that separated histological smooth muscle cells into layers with mature connective tissue containing a large number of collagen fibers with irregularly connected short bundles. The leiomyocytes in the tumor have an elongated plastic shape and large size (hypertrophied), which were reduced. The stroma was represented mainly by fibrocytes and fibroblasts, with a small number of veins with sclerosed walls. Secondary changes were manifested by signs of microscopic edema, necrosis and hyalinosis (see Fig.1, Fig.2).

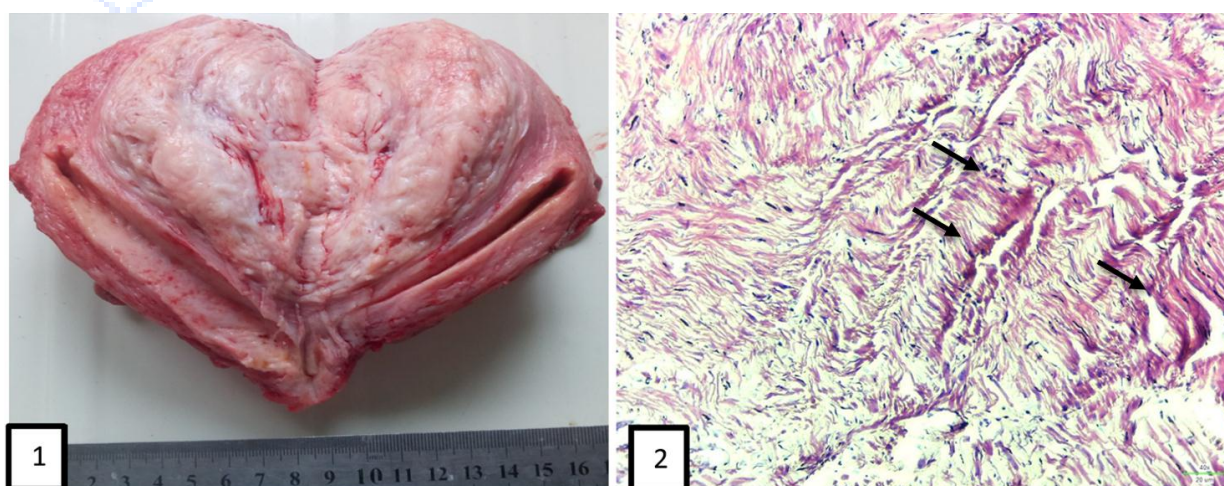


Figure-1,2. Simple leiomyoma. 1).Macroscopically: the tumor node is intramural, non-centrally grown, periphery clearly delineated from myometrium, 5 cm in diameter, full-thickness, uterine wall sharply thickened.

2).Microscopic: abnormal growth, proliferation of smooth muscle cells, connective tissue cells and fibrous structures. G.E. Dye. Die.10x10.

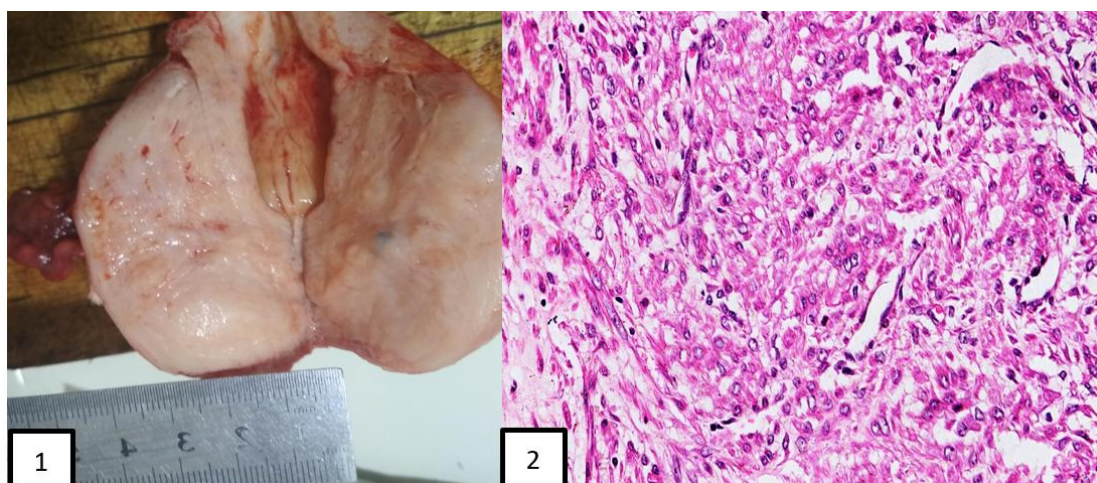


Figure-3 Simple leiomyoma. 1) Macroscopic: the tumor node is located intramurally, has grown non-centrally, the surrounding area is clearly delineated from the myometrium, the diameter is 3 cm, the uterine wall is sharply thickened.

4).Microscopic: smooth muscle cells and connective tissue cells, increased growth of fibrous structures, proliferation, mutagenic filling of vessels. G.E. dye. Size 10X20.

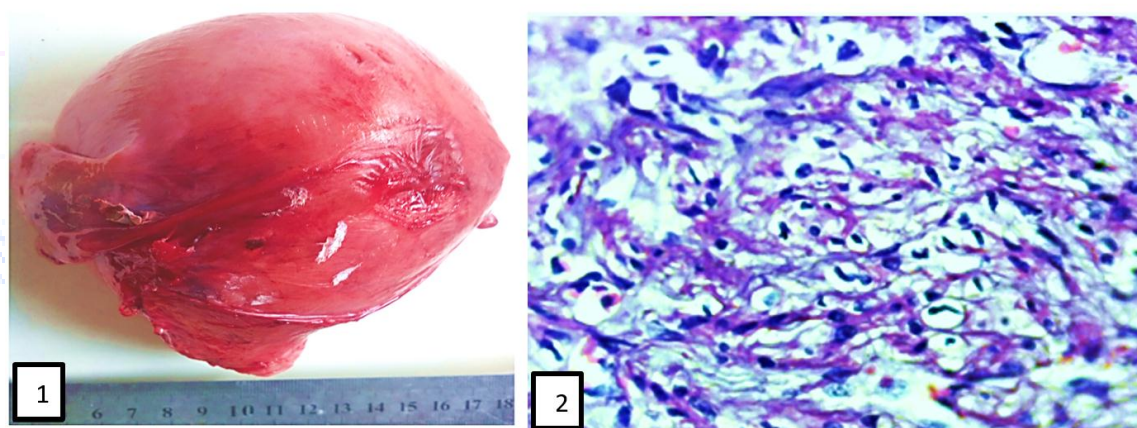


Figure-5 A simple leiomyoma. Macroscopically: tumor node is located intramurally, has grown non-centrally, the surrounding area is clearly demarcated from the myometrium, the diameter is 6 cm, and the uterine wall is sharply thickened.

6).Microscopic: most of them have the same round shape, with vacuolar inclusions in the cytoplasm of myocytes (1), irregularly arranged fibrous structures with intermediate tumors (2). G.E. dye. Size 10X20.

Proliferating leiomyoma was observed to consist of large, elongated, hyperchromic nuclei, hypertrophied and densely packed clusters of borderless leiomyocytes and poorly defined stroma, with the tumor stroma consisting mainly of veins and thin connective tissue barriers. No signs of cellular atypism and mitosis were observed; cell hypertrophy and multicellularity were observed.

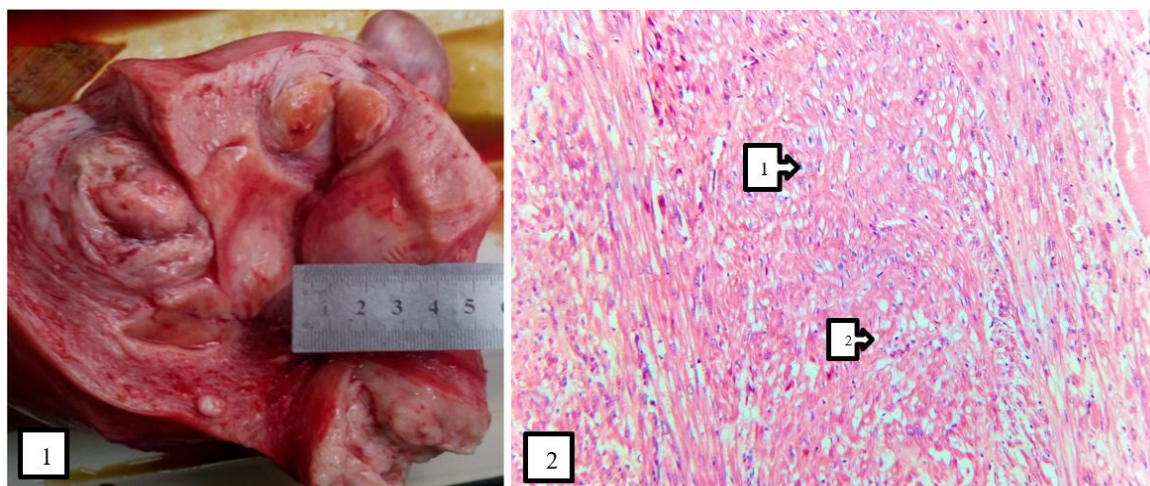


Figure-7 Proliferative leiomyoma 1).Macroscopically: the uterus is enlarged in size, the tumor nodes are submucosal and intramural of different sizes, multicentrically enlarged, the periphery is clearly delineated from the myometrium, and the uterine wall is thickened. The size of tumor nodules varies from 0.5 cm to 4 cm.8). Microscopically: most myocytes show active foci of proliferation (1), and vacuolar inclusions are found in the cytoplasm of myocytes. (2). G.E. dye. Size 10X20.

Twelve biopsy specimens characterized as proliferative uterine myoma were observed to contain foci of proliferation. Myomatous nodules were found to be highly cellular. It was observed that myocytes were mainly represented by cells of large size, tightly adhering to each other. Areas of proliferation were observed mainly around the veins and it was observed that they could be found both within and around the node. Muscle cells near the proliferation zones in the nodules were located as dense clusters, which were characterized by the fact that their nuclei had an oval shape and the stroma was underdeveloped.

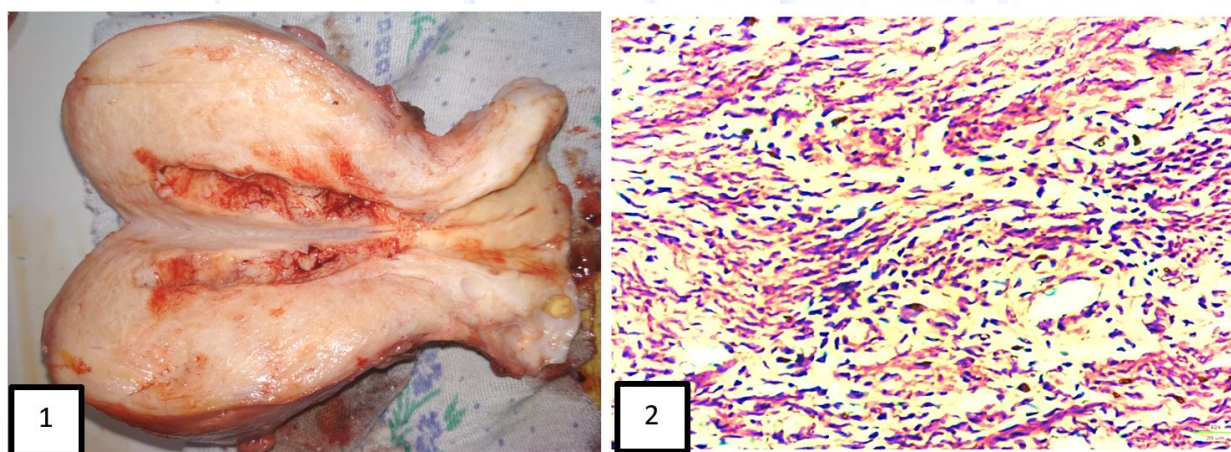


Figure-9.Proliferating leiomyoma 1).Macroscopically: tumor nodules are located intramurally and subserosely, uterine wall is thickened.10).Microscopically: focal proliferation of smooth muscle cells, smooth muscle cells and connective tissue, irregular growth of fibrous structures, moderate filling of vessels, formation of diapedesis thrombi, intermediate tissue edema. G.E. paint. Size 10X20.

Quantitative indicators of tissue structures were found in the second histogenetic type of leiomyoma, which is proliferative. In this type, it was observed that the area occupied by smooth muscle cells was slightly lower compared to the previous type, averaging 51.7%. This figure is also characterized by a relatively high level, considering the fact that smooth muscle cells occupy half of the tissue area in this species, indicating that the cells are proliferating and have a higher multiplication rate. In this type of

leiomyoma, it was observed that the area occupied by myofibrils increased by 4% compared to cellular leiomyoma. The predominance of proliferation process in this type of leiomyoma is necessarily determined by the abundance of blood vessels in the intermediate tissue. So, since the blood vessels in this leiomyoma tissue are relatively large and numerous, it was observed that the area they occupied was also large, occupying an average of 15.9% of the space. The stromal structures occupied relatively little space and were found to contain mitoses (2.8%) among smooth muscle cells.

Mitotically active leiomyomas (70%) were dominant in age group 1 (premenopause), while simple leiomyomas (65%) were dominant in age group 2 (postmenopause). Cellular leiomyomas were also found in group 1 (60%) and group 2 (40%). Simple leiomyomas were observed to localize predominantly as subcervical and intramural nodules, cellular leiomyomas were nodules of different localization, and mitotically active leiomyomas were submucosal nodules. Rapid tumor growth has been reported in 30 leiomyomas.

Leiomyoma growth is due to hypertrophy, proliferation, and apoptosis of leiomyocytes, as well as formation and secondary changes of stroma, accumulation of leiomyocytes, and prolongation of leiomyocyte life. The increase in volume of a typical leiomyoma is due to leiomyocyte hypertrophy, stroma formation, and secondary changes in the tumor. These data are based on G.I. Brexman, A.A. Corresponding to the results of Mironov (1986), they explained that collagen fibers crush capillaries, which leads to the development of tissue hypoxia and edema, in which microcirculation is disturbed.

The process of hypertrophy is vividly manifested in cellular leiomyomas. Cellular leiomyomas have a high cellularity.

Increase in the mass of mitotically active leiomyoma occurs due to increased proliferative activity of cells of "growth zones" – pericytes.

Conclusions: Thus, simple and proliferating uterine myoma differed in morphological and clinical course of the disease: When compared with normal myomas, patients with proliferating uterine myoma had predominant accuracy and intensity of complaints, anemia was more often observed. Severe complications in somatic and obstetric-gynecologic anamnesis became more characteristic of patients with proliferating uterine myoma. Multiple cases of combination of proliferative uterine myoma with adenomyosis and endometrial hyperplastic processes were observed.

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